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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/767,063	01/29/2004	Dennis Pavlik	2004P00322US	5465

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Siemens Corporation
Intellectual Property Department
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EXAMINER	
KIM, TAE JUN	

ART UNIT	PAPER NUMBER
3746	

DATE MAILED: 09/27/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/767,063	PAVLIK ET AL.	
	Examiner	Art Unit	
	Ted Kim	3746	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *01/29/2004*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 2, 8, 10, 11, 16, are rejected under 35 U.S.C. 102(b) as being anticipated by Bethel (3,841,824). Bethel teaches a method for combusting a gaseous fuel with a gaseous oxidant, prior to passing the hot combustion products to a gas turbine comprising: (A) feeding combustible gaseous fuel (col. 7, line 42+) to an enclosed combustor through at least one fuel feed tube and providing at least one combustion flame (see Figs. 6, 7) within the enclosed combustor at the end of the fuel feed tube, the flame having a top flame tip and a bottom root end at the end of the feed tube; (B) feeding gaseous oxidant to contact gaseous fuel near the combustion flame; (C) providing an electric field (col. 5, lines 7+) in the region of the combustion flame; (D) adjusting the velocity of the gaseous oxidant to provide inherently turbulent flow and turbulent mixing with the gaseous fuel near the root end of the flame (note that at the least, gas turbine combustors inherently have a turbulence flow and turbulent mixing, note that swirlers for the air will inherently produce turbulence as well see e.g. col. 3, lines 13+), to provide combustion and ionization of the gases at least at their contact interface; (E) adjusting the electric field to provide a corona discharge 36 to enhance ionization and turbulent mixing

of the gases which in turn improves combustion; and (F) passing the hot combusted mixed gases to a gas turbine (see Fig. 1 and col. 6, lines 46; wherein the electric field also inherently influences turbulent mixing of the oxidant and fuel, improving combustion; wherein the end of the fuel feed tube acts as a burner for the combustion flame; wherein the electric field inherently produces ionization concentrated at the boundary between the fuel and the oxidant. The following extrinsic evidence in the Faulkner 5,303,554 patent (see col. 5, lines 1+) and the Shekleton 5,040,371 patent (see col. 1, lines 15+) are provided to show that flows in gas turbine engine combustors will inherently be turbulent.

3. Claims 1, 2 are rejected under 35 U.S.C. 102(b) as being anticipated by the Calcote et al paper of the IDS. Calcote et al teach a method for combusting gaseous fuel with a gaseous oxidant in a combustor comprising: providing gaseous oxidant and a combustible gaseous fuel; mixing the gaseous oxidant and gaseous fuel, where the gaseous oxidant has a velocity relative to the fuel which is sufficient to cause turbulent mixing with the fuel (see page 29, left col.) and combusting the gaseous oxidant and fuel in the region of a combustion flame and an electric field, where the electric field (see Fig. 1) produces an electrical stress resulting in local breakdown of the mixture of gaseous oxidant and fuel, and a corona discharge (explicitly taught on page 26, left col., 3rd full paragraph) that in turn generates intimate turbulent mixing of the gaseous oxidant and fuel; the oxidant and fuel are mixed near the combustion flame. Calcote et al specifically teach that the work done in the paper undertakes a quantitative understanding of the

mechanism involved (page 26, left col., 4th full paragraph) referring to the previous corona discharge of the preceding paragraph.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1, 2, 4, 5, 8-20 rejected under 35 U.S.C. 103(a) as being unpatentable over Bethel (3,841,824) in view of any of Faulkner (5,303,554), Shekleton (5,040,371) and the Calcote et al paper and optionally in view of Poujade (3,035,412). Bethel teaches various aspects of the claimed invention and inherently teach the turbulence of the flow to the flame and in the flame. However, in order to obviate any doubt, the Faulkner 5,303,554 patent (see col. 5, lines 1+) and the Shekleton 5,040,371 patent (see col. 1, lines 15+) are provided to show that flows in gas turbine engine combustors will be turbulent. The Calcote et al paper show that the flame turbulence, is well known in the art see page 29. It would have been obvious to one of ordinary skill in the art to make the flame turbulent in order to facilitate enhanced combustion rates and/or flame stability. As for the various ranges claimed, these are old and well known in the gas turbine combustor art and would have been obvious to use as an obvious matter of finding the workable ranges in the art. As for the gas turbine having an electric generator, these are entirely old and well known

in the art as evidenced by Poujade 4 (col. 4, lines 18-36) for generating electricity, including for the electrodes. It would have been obvious to one of ordinary skill in the art to employ an electric generator, as taught by Poujade, in order to generate electricity, including for the electrodes.

6. Claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bethel (3,841,824) in view of any of Faulkner (5,303,554), Shekleton (5,040,371) and the Calcote et al paper and optionally in view of Poujade (3,035,412), as applied above, and further in view of Wright (3,416,870). Bethel teaches various aspects of the claimed invention but does not teach the specific use of premixed fuel and oxidant. Note that premixed fuel and oxidizer is well known in gas turbine engine combustors as established by Faulkner (col. 4, lines 43+). Alternatively, Wright teaches using premixing (col. 2, lines 46+) fuel with oxidant in the context of an electric field applied to the flame. It would have been obvious to one of ordinary skill in the art to employ a premixed fuel and oxidizer, as being a well known type of flame contemplated for gas turbine engines and/or in context of electric fields imposed on flames.

7. Claims 1, 2 are rejected under 35 U.S.C. 103(a) as being unpatentable over Calcote et al paper of the IDS. Calcote et al teach a method for combusting gaseous fuel with a gaseous oxidant in a combustor comprising: providing gaseous oxidant and a combustible gaseous fuel; mixing the gaseous oxidant and gaseous fuel, where the gaseous oxidant has a velocity relative to the fuel which is sufficient to cause turbulent mixing with the fuel (see page 29, left col.) and combusting the gaseous oxidant and fuel

in the region of a combustion flame and an electric field, where the electric field (see Fig. 1) produces an electrical stress resulting in local breakdown of the mixture of gaseous oxidant and fuel, and a corona discharge (explicitly taught on page 26, left col., 3rd full paragraph) that in turn generates intimate turbulent mixing of the gaseous oxidant and fuel; the oxidant and fuel are mixed near the combustion flame. Calcote et al specifically teach that the work done in the paper undertakes a quantitative understanding of the mechanism involved (page 26, left col., 4th full paragraph) referring to the previous corona discharge of the preceding paragraph. Hence, it would have been obvious to one of ordinary skill in the art to produce a corona discharge with the flame of Calcote et al, as the work of Calcote et al is a natural progression of the earlier work done in the field with corona discharges.

8. Claims 17-20 rejected under 35 U.S.C. 103(a) as being unpatentable over Beyler et al (4,023,351) in view of Poujade (3,035,412). Beyler et al teach a jet engine combustor ignition system comprising a combustor; where the combustor combusts gaseous oxidant and gaseous fuel and feeds the hot gaseous combustion products to the gas turbine; where the combustor comprises: (A) a combustion flame within the combustor; (B) at least one entry for gaseous oxidant feed and gaseous fuel feed; and [(C) an electric field which is generated at or through the combustion flame, where the electric field is effective to cause ionization resulting in a corona discharge, which increases turbulent flow mixing of the gaseous fuel and gaseous oxidant before they undergo a combustion reaction; wherein the electric field also improves combustion in the

combustor – this step is given little patentable weight as there is no structure claimed to create an electric field, and the electric field 36a is created]; wherein the oxidant from 48 and fuel 17a are mixed near the combustion flame; wherein the oxidant from 2a and fuel are first premixed and then passed to the combustion flame. Beyler et al do not specifically teach the jet engine is a gas turbine engine with an air compressor, and an electric generator. Poujade teaches a gas turbine with an air compressor, and an electric generator 4 (col. 4, lines 18-36) for generating electricity, including for the electrodes. It would have been obvious to one of ordinary skill in the art to make the jet engine as gas turbine engine with compressor and an electric generator, as taught by Poujade, as a well known type of aircraft engine used in the art and in order to generate electricity, including for the electrodes.

Contact Information

Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Ted Kim whose telephone number is 571-272-4829. The Examiner can be reached on regular business hours before 5:00 pm, Monday to Thursday and every other Friday.

The fax number for the organization where this application is assigned is 571-273-8300.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Thorpe, can be reached at 571-272-4444. Alternate inquiries to Technology Center 3700 can be made via 571-272-3700.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status

information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). General inquiries can also be directed to the Patents Assistance Center whose telephone number is 800-786-9199. Furthermore, a variety of online resources are available at http://www.uspto.gov/main/patents.htm

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